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Libarian, Miss C. A. Timmerman, Rev. L. H. Lighthipe; Committees on the Local Flora, Phanerogamia, Dr. Thomas C. Porter, Dr. N. L. Britton, Dr. H. H. Rusby; Cryptogamia, Elizabeth G. Britton, Maria O. Le Brun, Dr. Smith Ely Jelliffe.

Prof. Byron D. Halsted read the announced paper of the evening, " Some Results of a Study of Fruit Decays," illustrated by diagrams. An abstract of the paper will be published in a subsequent number of the BULLETIN. Prof. Halsted exhibited a set of his distribution of 100 species of American weed-seeds, an account of which appears in the present BULLETIN.

Mr. Lighthipe exhibited *Amarantus blitoides* from Sewaren, N. J. (See note on p 70)

WEDNESDAY, JANUARY 25TH.

Dr. Morong in the Chair and 29 persons present. Dr. Britton was elected Secretary *pro. tem.*

Prof. H. W. Conn, of Wesleyan University, was elected an active member.

The following papers were read and illustrated by specimens and maps:

" Some new Species of Characeæ," by Dr. T. F. Allen (to be published in a subsequent number of the BULLETIN).

" Preliminary Report on the Flora of Luzerne County, Penna.," by Mr. A. A. Heller (published in the present BULLETIN).

" The Mosses of White Top Mountain, Virginia," by Mrs. N. L. Britton. This will be incorporated in the account of the exploration of Southern Virginia prosecuted during the last summer, to be published in a number of the MEMOIRS.

The Secretary stated that the memorial of Dr. Newberry would be presented at the second February meeting, and that Mr. J. H. Redfield had prepared an article on the life of Mr. I. C. Martindale, which would be printed in the March BULLETIN.

Reviews of Foreign Literature.

A Monograph of the Myxogastres. By George Massee. (Methuen & Co., London, 1892. 359 pages and 12 chromo lithograph plates containing 313 figures.)

An introductory portion, occupying twenty-seven pages, is occupied by a discussion of the affinities and classification of the group. De Bary's statement regarding want of relationship between this group and the fungi are matched off against each other and finally dismissed as self-contradictory.

The writer then draws a parallel between the methods of growth in the Myxomycetes and Mucorini, and judges that this is sufficient to indicate affinities, quoting from De Bary: "We find it impossible to establish any strict homologies, but are limited to resemblances in form, structure and mode of life." That the similarities are sometimes striking cannot be denied, but that they should be interpreted as indicating affinity (community of descent) is by no means clear. It may be that Mr. Massee is acquainted with some other kind of affinity, not involving descent, and that the groups under discussion have this kind; indeed, it must be so, for if not there is a direct clash between this part of the discussion and one of his conclusions, which says: "There is no evidence in favour of the supposition that the Myxogastres are degenerated members of the vegetable kingdom, whereas the idea that fungi originated by differentiation from chlorophyll-bearing plant ancestors is generally admitted."

How this very definite and very desirable conclusion was extracted from any part of the previous discussion is an exceeding great mystery, but the curious can find it and four other conclusions, some even more mysterious, drawn up and numbered on page 21.

The introductory portion of the book is, however, as a whole, interesting. The existence of hybrids between species of Myxomycetes is described, and a list given of the colors of the plasmodia of a considerable number of species. Many quotations from various investigators are here collated, and though sometimes used in ways never contemplated by their authors, are still valuable to those to whom the original works are not easy of access. Mr. Massee has settled many important points to his own satisfaction, but has ignored many facts and distinctions which will prevent his conclusions being widely or permanently accepted. For example, the terms sporangium, plasmodiocarp and æthallium, are used with the most thorough indiscrimination. On page 26 *Tubulina cylin-*

drica and fasciculate *Trichiaceæ* are spoken of as æthallia. The six species of *Lycogala* are each described as plasmodiocarp, while the generic characterization begins: "Sporangia æthallioid, grouped together in an intricate manner, and forming a large plasmodiocarp inclosed in a thick, common cortex." These terms might easily have been dropped if there had been no wish to preserve the distinctions which they imply, but no, they are again and again used, with the most bewildering impartiality, all three terms in one sentence describing the same organisms. This condition is, of course, fruitful in peculiarities of classification and arrangement.

It is, however, as a systematic work that this volume might be supposed to have its importance. As the author remarks in the preface, his facilities in the way of material and types were exceptional, and hence the hope of a work of exceptional value was not unwarranted. The typographic beauty of the book increases the anticipated joy of using it, and the plates are the first to convey an idea of the delicate and curious beauty of form and color in this group. Fault has been found with these plates, and especially with the coloring, but it must be said that, as a whole, compared with previous publications, the plates are well calculated to suggest correct ideas of the organisms they represent. And there is another reason why these plates should be praised—they are the one redeeming feature of the book.

It is a most uncomfortable realization that from what might have been a great addition to the literature of one's favorite group there can come only increased confusion, and yet to say that the whole systematic portion of this work is entirely unreliable, and careless to the last degree, is the only way in which the truth can be told. It is the result, no doubt, of much labor, and contains a great and valuable supply of information; in fact, we must take it in spite of its defects as the only comprehensive and recent work on the subject; yet we can never have certainty nor even strong confidence in any statement, no matter how definite. The grossest carelessness pervades it, in the most important as well as the most trivial matters, so that it must be interpreted with the most careful eclecticism.

An amended edition is not likely to be issued, and we must make the best of the present one. As a help in doing this the following remarks and corrections are collated from a copy of the work of which parts have been given practical trial. That the supply of errors is in any way exhausted is not to be supposed, for each attempt at use in determination unearths a large crop of mis-statements and oversights.

In the first place there are hosts of small blunders—typographical errors they might, perhaps, be called, if they were not so numerous and confusing. Errors in the spelling of scientific names occur as follows:

Siphotychium (p. 31, also p. 34), for *Siphoptychium*; *Ellisiana* (p. 98), for *Ellisianum*, to agree in gender with *Lamproderma; robusta* (p. 99), for *robustum; cinera* (p. 150), for *cinerea; Trevelyana* (p. 202), for *Trevelyani*, the original name; *melanospora* (p. 325), for *melanosperma*, the original name; *dealbata* (p. 207), for *dealbatum; Ceinkowskia* (p. 197, p. 307, p. 336 and p. 337, twice), for *Cienkowskia.* In the preface and index this generic name is spelled correctly.

And the arithmetic is no better than the spelling. Of twenty-five genera containing more than one species the number of species is wrongly stated in eight: *Tubulina* 11 (correct number, 12); *Enteridium* 3 (5); *Clathroptychium* 3 (4); *Cribraria* 19 (20); *Stemonitis* 23 (24); *Perichæna* 9 (10); *Ophiotheca* 9 (10); *Badhamia* 18 (17). The author says, "Species 3," under *Reticularia.* As only *R. lycoperdon* appears, we must infer that one species was counted three times, or that the other two were lost, perhaps by the printer. It is, of course, a matter of small importance whether the number of species is correctly given so long as the species are correctly described. The above facts suggest, however, the very important question whether the author was in the same state of mind when he counted (?) the lines on his micrometer as when he failed to count his species.

In the matter of citation of authorities for specific binomials this is a pioneer work. All the systems previously proposed seem to be used in different places, and several new ones. Through this peculiar combination of methods the result is reached that more than a quarter (118 out of 427) of the species have after them the expressive abbreviation "Mass." But all theories fail of a complete explanation of this great massacre of ancient authorities and old friends.

For example, we have *Arcyria cinerea*, Mass. Now Bulliard applied this specific name in 1791, and Schumacher used the binomial in 1803, and nearly all authors since then have recognized this form and name. What is still more remarkable, *A. pomiformis* is reduced to a synonym under *A. cinerea*, though antedating that species by three years. There is also *Stemonitis typhina*, Mass., a binomial applied in the Flora Germanica in 1788. About ten more cases of this kind might be mentioned, where neither the author of the specific name nor of the binomial is cited, but some third party. The general tendency seems to be to recognize the "first name under the genus," but all kinds of tastes in such matters are consulted, as, for instance, *Ophiotheca circumscissa*, Currey (p. 131). According to the synonymy the name Currey used was *chrysosperma*, Wallroth being the author of *circumscissa*, and Rostafinski having first made the present combination.

Those for whom "the first name under the genus" has no special sanctity will write (p. 98) *Lamproderma penetrale* (Cke. & Ellis), instead of "*L. Ellisiana Cke.*" Having decided that *Trichia persimilis*, Karsten, and *T. intermedia*, Massee, are the same, *intermedia* stands as the species, and *persimilis* is down as a synonym, though antedating the other name by twenty-one years.

On page 191, in a note under *Trichia verrucosa*, Berk., is mentioned *T. dictyospora*. No species of this name is described, figured or mentioned in the index. The note in which the name occurs is taken by the author from his "Revision of the Trichiaceæ," and on the same page of that paper, in a note on *T. chrysosperma* is another mention of this name, *dictyospora*, and still another, *T. Archeri*. There seems to be no other mention of these species, which leaves us in doubt as to whether they were lost, strayed, or stolen. It may be that Mr. Massee had intended to apply his name, *Archeri*, to *L. verrucosa*, and *dictyospora*, to *T. Kalbreyeri*, but this is only a guess.

The species published by Rostafinski as *Chondrioderma subdictyospermum* appears as *C. dealbatum* Mass., with a reference to "Didymium dealbatum B. and C., in Herb. Berk. n. 10,756." Concerning this change the author remarks: "There appears to be no good reason why Berkeley's specific name, though only a manuscript one, should have been changed by Rostafinski. Well, if the unreasonableness of supplanting a published name by a "manuscript one" is not evident to Mr. Massee, why did he not restore *Stemonitis trechispora* B. and C. for *S. dictyospora*, Rost., on page 83? Can it be that the cause of this inconsistency was that *dealbatum* could be put into another genus and have "Mass." after it? The fact that "Mass." is written for every cause and no cause preserves us from this suspicion, but leaves us no theory for explaining the difference in the treatment of two exactly parallel cases.

On page 231 is *Didymium neglectum*, Mass. (nov. sp)." The fact that this name had been used by Berkeley for a species considered by our author, (p. 224) to be synonymous with *D. squamulosum*, was perhaps overlooked by him—perhaps not. Considering the variability of *D. farinaceum* the characters on which the new species rests are of very uncertain value, but if it should prove to be distinct it might be well to call it *D. Masseei.*

It is always well to have a species sufficiently described, but *Didymium flavidum*, Peck, is especially honored in being described twice, the first description (p. 247) purporting to be based on an "Authentic specimen from Peck, in Herb., Kew," while the second (p. 251) is a copy of Peck's original description placed under the remark, "Owing to imperfect diagnoses and absence of type specimens, the following cannot be arranged in their respective sections."

Appropriate names are a pleasant aid to the memory, but this is hardly sufficient to justify what we find on page 263, where having decided that three species of *Craterium*, *vulgare*, *pyriforme*, and *minutum*, should be looked upon as one, our author writes them all down as *C. confusum*, Mass.! Well, the species had had eight or ten names before, so that an additional one is a matter of no great importance. Sticklers for priority will probably call the species *C. minutum* (Leers)—if they agree that the three are properly merged. There is another *Craterium minutum* (p. 273) described by Kickx, which name must, of course, be changed.

Physarum compressum is given as a synonym of *P. nefroideum* (p. 286), but later on (p. 291) there is a long discussion as to whether it is not the same as *P. Phillipsii.*

Badhamia varia, Massee (p. 319), is another new name made under the same circumstances as *Craterium confusum*. It includes *Badhamia hyalina, capsulifera, utricularis* and *magna*. The author is probably correct in uniting these species, but his new name will scarcely be accepted in this age of the world.

Even a casual discussion of the classification would occupy so much space that one must be contented merely to state here the opinion that the group *Peritrichiæ* includes organisms having only the most slender geometrical similarities, and that a natural arrangement would compel a division into several orders, coördinate with the other three.

The genera *Licea* and *Lindbladia* are united to *Tubulina*, though these are as well-defined as most of those that remain. The value of a character is to be sought in its constancy, not in its size, and its importance may not be impaired in one group, because it is variable in another. By reason of the fact that the genus *Licea* is no longer recognized, the following note under *Tubulina Lindheimeri* is curious: "The type specimen is so thoroughly crushed that it is impossible to say whether the plant is a *Licea* or a *Tubulina*, but in all probability the latter, as there appear to be indications of the bases of crowded sporangia."

Physarum cæspitosum, Peck, is referred to *Tubulina*. *T. microspora* Cke. (Grevillea, xvi. 116) is not described as a species, nor mentioned as a synonym.

Regarding the validity of Mr. Wingate's family *Orcadellaceæ* the author says: "I am afraid that such trivial characters are admitted as sufficient for family characteristics, those left for generic distinctions will be reduced to inappreciable quantities." This solicitude for generic distinctions is very commendable, but it should not have prevented the realization that *Orcadella* is about as different from its so-called relatives as a Myxomyces without columella and capillitium could well be.

Rostafinski's genus *Heterodictyon* is united, probably with great propriety, to *Cribraria*.

Stemonitis and *Comatricha* are united under the former name. The distinctions previously alleged between these genera were purely imaginary, and it is well not to separate the species until better reasons can be found for so doing

In this group we have a good example of the author's ideas and methods of classification. The major divisions of the Myxomycetes are first (p. 30) called orders, and their divisions sub-orders, but here (p. 69) we have the *Columelliferæ* spoken of as "the present section," and then "the two sub-sections." On page 71 we have the formal headings, "Sub-sect. *Stemonitæ*" and "Sub-sect. *Lamprodemæ*," but no distinctions between the two are alleged. Under the first "sub-sect." are *Stemonitis*, *Siphoptychium*, *Amaurochæte*, *Brefeldia*, *Rostafinskia* and *Reticularia*; under the *Lamprodermae* come *Enerthenema*, *Ancyrophorus*, *Lamproderma*, *Echinostelium*, *Raciborskia*, and *Orthotricha*. Under the description of *Lamproderma* we read, "closely allied to *Diachaea* and *Stemonitis*, but differing from both in having the threads of the capillitium originating from the apex of the columella only." On the next page, under the first species, *L. violaceum*; "a very distinct and beautiful species, characterized by having the sporangium flattened and umbilicate, and the almost colorless capillitium springing from every part of the columella." Thus the first species does not possess the only distinctive generic character, and would be a *Stemonitis* if the definitions were strictly applied, and yet, by the arrangement here followed, five genera come between *Lamproderma* and *Stemonitis*, none of which bear any very close relation to either. *Siphoptychium* has been supposed to find its nearest ally in *Tubulina*, and the author goes so far as to suggest its descent from *Tubulina cylindrica*, or some closely allied form, and yet he puts it in another order, between *Stemonitis* and *Amaurochaete*, to neither of which it has any affinity, except the other kind which does not involve descent.

Ancyrophorus is a recently described genus from Denmark, allied to *Enerthenema*, but with the capillitium springing from the upper part of the columella as well as from its discoid apex. There is an undescribed American species.

Orthotricha microcephala, Wingate, has been reduced by Schröter to *Clastoderma Debaryanum*, A. Blytt, but this genus is not mentioned, nor the species either, in the present work, though Schröter's reduction was published in 1889.

If there are any valid distinctions of generic importance between *Raciborskia* and *Orthotricha* they are not made plain by the descriptions, and it is the opinion of Raciborski that the two may prove to be identical, yet in a note after *Orthotricha* Mr. Massee says: "I am not at all convinced in my own mind as to whether the present genus belongs to the present division or to the *Peritricheæ*." Which member of that very heterogeneous group could be imagined to have any affinity with *Orthotricha* is hard to guess, but then affinity seems not to be a necessary qualification for admission into the *Peritricheæ*.

The next "Order," *Calotricheæ* is a rather compact one, but the limits of the included genera are utterly undefined, if we are to believe the author's statements. *Dermodium* is reduced to *Lycogala*, with the suggestion that *D. conicum* is nothing more than *Lycogala epidendrum*. *Hemiarcyria* is reduced to *Arcyria!* To reduce it to *Trichia* would appear warrantable, and to reduce the three genera, and some others, to one, would be consistent, but there is little convenience and less reason in the present arrangement. To keep the number of genera the same, perhaps, we have a new genus, *Heterotrichia*, from South Carolina. All the characters alleged are possessed in greater or less degree by species in other genera. *Hemiarcyria* is a much better genus, in that its characters are more important and constant. *Hemiarcyria Ellisii*, Mass, separated from *H. rubiformis* solely on account of its warted spores, has been re-united with that species.

In only four species of *Trichia* is the number of spirals given. Counting the spirals is rather bothersome business, and the author is apparently not fond of mathematical exercise of this kind ; still, he might have given the figures as others have counted them.

Rostafinski's distinction between *Didymium* and *Chondrioderma* was sufficiently flimsy, alleging that the sporangial walls in in *Didymium* always bear *crystals* of lime, while those of *Chondrioderma* have a more or less compacted coating of amorphous *granules*. Reference to crystals is now dropped, leaving the only distinction in the relative compactness of the lime. Under the Rostafinskian method species were sometimes undecided in their generic preferences, but by the new arrangement it will be often difficult to tell where an individual should go, for example, *C.* or *D. spumarioides* is frequently covered above by a smooth plate of lime, while on the sides and base the lime is in the form of scales, or even a fine powder.

Chondrioderma ochraceum, Schröter, has the lime in furfuraceous condition, but for some reason (?) did not go with its relatives into *Didymium*.

Chondrioderma and *Physarum* seem to get very close together. *P. brunneolum* has a polished, porcelain-like wall, and lime in the knots of the capillitium, and what is worse the lime has the form prescribed for *Badhamia!* The next species leans strongly toward *Tilmadoche*, and the second toward *Craterium*.

In the way of variety of terms nothing more would be asked. There is "sporangium," "peridium," "perithecium," "pileus," and "capitulum" (p. 234), though this last seems to be a slip for "capillitium." On page 282, third line from bottom, "capillitium" probably means "columella;" and on 192, eight lines from bottom, "spores" should, to make sense, read "spines."

On page 349, among explanations of plates, "*Cribraria macrocarpa*" seems to be a mistake for "*C. microcarpa*," a very different species.

The index is incomplete, and even the alphabetic arrangement is in places out of joint.

One finds, on referring to the "Descriptions of Figures," that numbers 85 and 86 are "*Badhamia fusea*, Mass." It appears to be a fine species, and we should be glad to know more of it, but alas, there is no more, no *Badhamia*, or other species, of that name, no synonym, nothing in the index. Perhaps it is an error for *fusca*? No, there is a *Stemonitis*, and an *Arcyria*, of that name, but no *Badhamia*.

There are a few remarks which may become classic. Here are two mild samples: "Sometimes two or three sporangia are seated on a common stem, forming a plasmodiocarp." The following concerns *Fuligo varians*: "In the plasmodium condition often occurring amongst dead leaves as a bright yellow soft moss."

Why argue longer about the affinities of the group?

Index to Recent Literature Relating to American Botany.

Aganisia ionoptera (Bot. Mag. t. 7270).

Agave angustissima. J. N. Rose (Gard. and For. vi. 5, 6; illustrated).